

SHARP SERVICE MANUAL

CODE : 00ZEL2631L/2E



EL-2631L MODEL EL-2615P

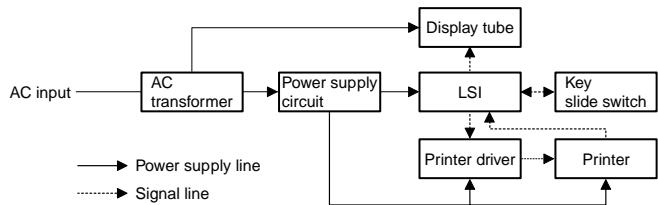
(ADD the SPEC CODE: EL-2615P (Y1C)
EL-2631L (ACO))

STANDARD FUNCTION		12 digits	1M
D	I	1,234,567,890.12 M	E
ISPLAY	SECTION	ELEMENT : Display tube	PARTS NAME : 13-MT-89G
NUMERAL	12 digits	SYMBOL :	1 digit(s)
3.8	9.6	M	• E
POWER SUPPLY	AC : ○	DC : X	
BATTERY TYPE	AC only		
AC ADAPTER			
RECHARGEABLE BATTERY			
POWER CONSUMPTION	MULTI : 11.1W 220V - 240V : 62mA 120V : 115mA		
AUTO POWER OFF TIME			
MEMORY PROTECT	Yes* ¹ (TAX only)		
DIMENSIONS (mm)	228 (W) × 314 (D) × 70.5 (H)		
CALCULATIONS	Four arithmetic calculations, Constant calculation, Power calculation, Chain calculation, Reciprocal calculation, % calculation, Add-on (discount) calculation, Grand total calculation, etc.		
NOTE) *1	This calculator operates only on AC power. Further, the memory is retained only while the AC cord is plugged in and clears when the AC cord is disconnected.		

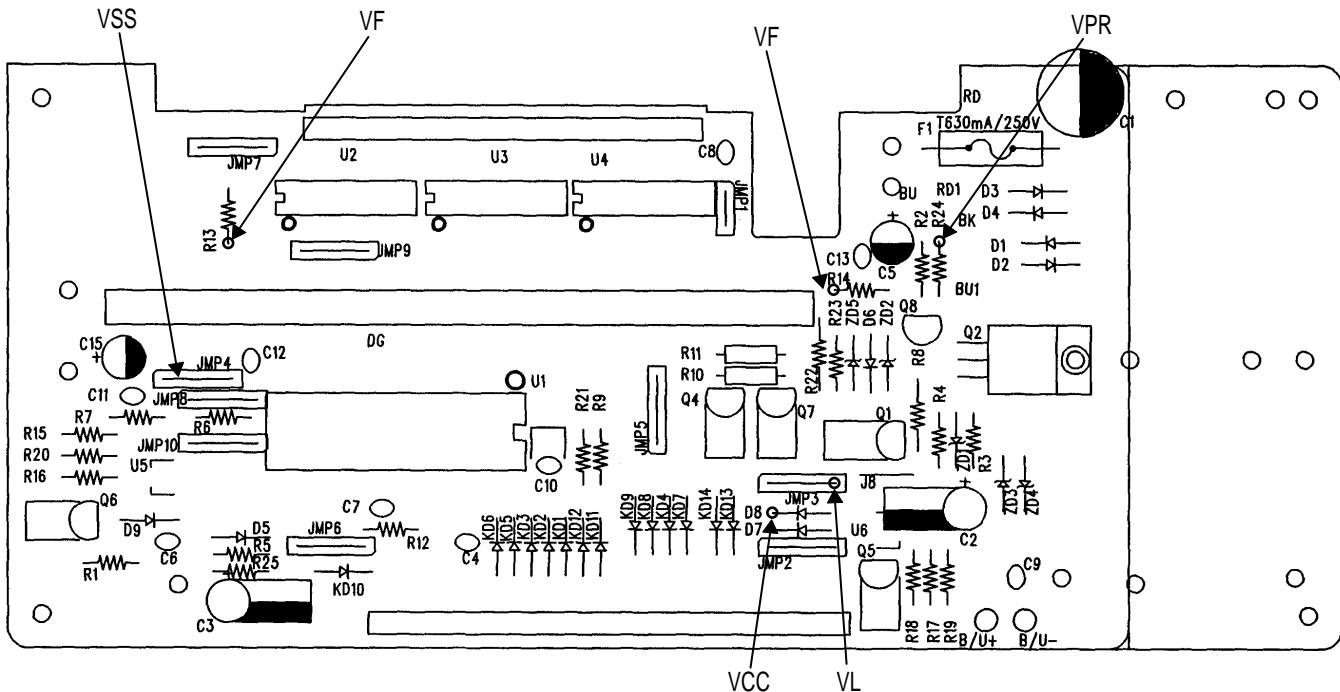
KEY LAYOUT	
OFF • P P/M C GT • SET K+A ↑ 5/4 ↓ F 6 3 2 1 0 A	RATE
M/M → 7 8 9	+/- MU TAX+ TAX-
GT CE 4 5 6	% *M
#/◊ 1 2 3	÷ ◊M
*	M- M+ M+
0 00 •	= ×
KEY SYSTEM : Plastic key + Key rubber	
L Name : TC83220-0406	S
Type : S-DIP	I
Pin : 42 pins	
MODEL NAME	PA-512
PRINTING SYSTEM	Print wheel selective system
PRINTING CAPACITY	18 digits
CHARACTER DIMENSION	1.5 (W) × 2.8 (H) mm
INPUT BUFFER	12 stages
PRINTING SPEED	Approx. 3.6 lines / sec.
PAPER FEED SPEED	Approx. 3.6 lines / sec.
PAPER RELEASE MECHANISM	Yes (Forward only)
INK RIBBON	2-color system (Black / Red)
INK ROLLER	
INK LIFE	Approx. 25,000 lines
PAPER	Plain paper
PAPER SIZE (Roll Paper)	58±9 mm (W), 80mm in diameter (max.) (DPAPR1004CSZZ...5 rolls / pack)

Parts marked with "⚠" are important for maintaining the safety of the set. Be sure to replace these parts with specified ones for maintaining the safety and performance of the set.

1. BLOCK DIAGRAM



■ MEASURING PIN POSITION



3. INK RIBBON REPLACEMENT

1. Remove the paper roll from the calculator. (Tear the paper and remove it from the print mechanism by using .)
2. Turn the power off before replacing ribbon.
3. Remove the printer cover by sliding it towards the back of the calculator. (Fig.1)

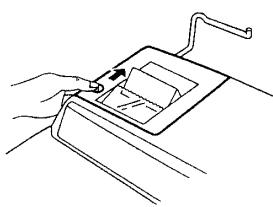


Fig. 1

4. Remove the old ribbon by pulling it up.
5. Insert the new ribbon.

2. POWER VOLTAGE

Measurement position	Power voltage
VF-VF	4.2Vac ~ 5.1Vac
VSS-VCC	5.7V ~ 6.6V
(*)VL-VRP	14V ~ 16V

Measure with the AC input voltage rating.

(*1): Measurement of VL-VPR voltage must be performed with the PAPER FEED key being pressed.

2. Turn the power off before replacing ribbon. securely in place.

- With the black side of the ribbon facing upwards, place one of the reels on the reel shaft on the right. (Fig.2) Make sure that the reel is securely in place.

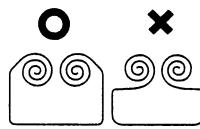


Fig.2

7. Thread the ribbon around the outside of the metal guides. (Fig.3)

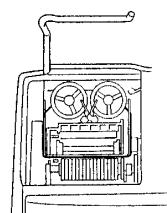


Fig.3

8. Take up any slack by manually turning one of the reels.
9. Replace the printer cover.
10. Replace the paper roll.

4. PAPER ROLL REPLACEMENT

Never insert paper roll if torn. Doing so will cause paper to jam.

Always cut leading edge with scissors first.

1. Insert the leading edge of the paper roll into the opening. (Fig.1)

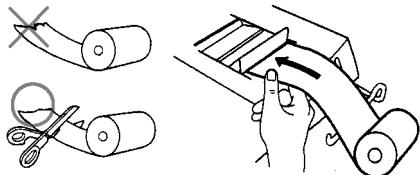


Fig.1

2. Turn the power on and feed the paper by pressing . (Fig.2)

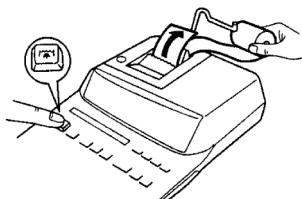


Fig.2

3. Insert the paper roll to the paper holder. (Fig.3)

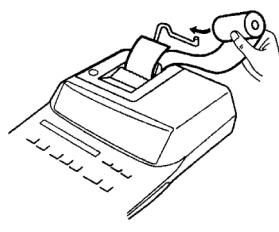
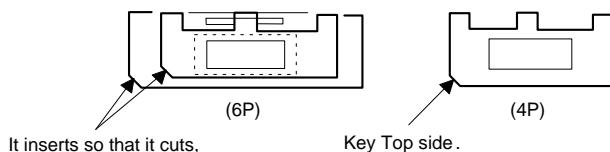


Fig.3

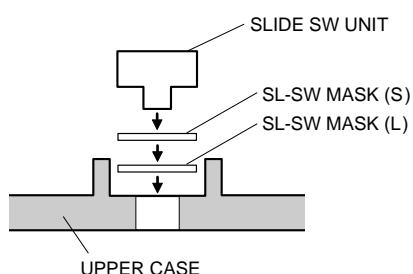
Caution: Do not pull paper backwards as this may cause damage to printing mechanism.

5. NOTES FOR SERVICING

(1) SL-SW BLINDER (4P/6P)



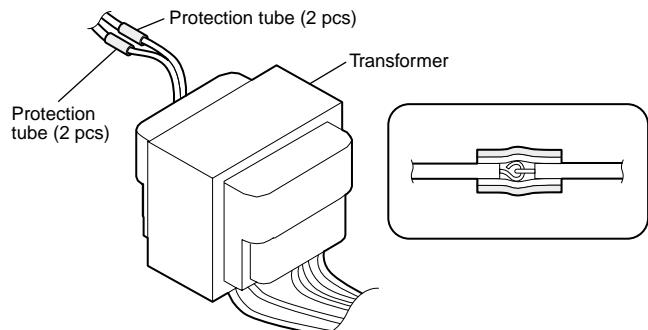
It inserts so that it cuts, and it may lack and a part may come to the Key Top side.



(2) PROTECTION TUBE

(2)-1. EL-2631L (ABC, ACO), EL-2615P

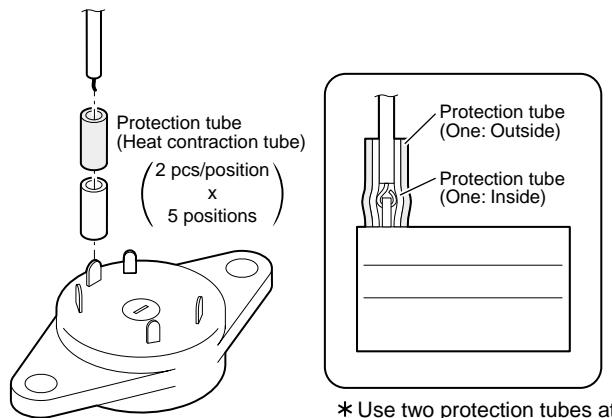
Insulate between the transformer and the AC cord connector with protection tubes (2 pcs x 2 positions).



(2)-2. EL-2631L (TRC)

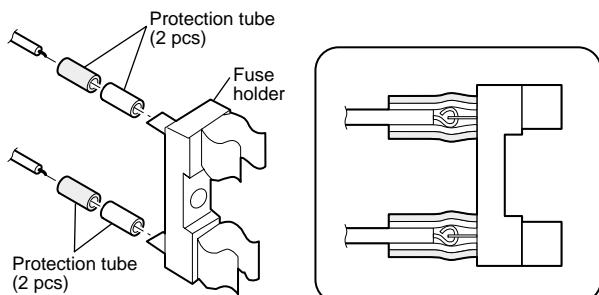
The EL-2631L (TRC) uses 14 protection tubes in total (that is, 2 pcs x 7 positions) as shown above.

[VOLTAGE SELECTOR]



* Use two protection tubes at every one position.

[FUSE HOLDER]

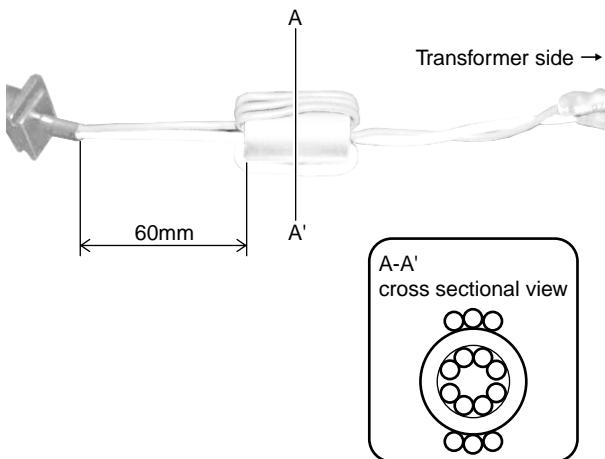


(3) FERRITE CORE (EL-2631L (ACO))

(3)-1.

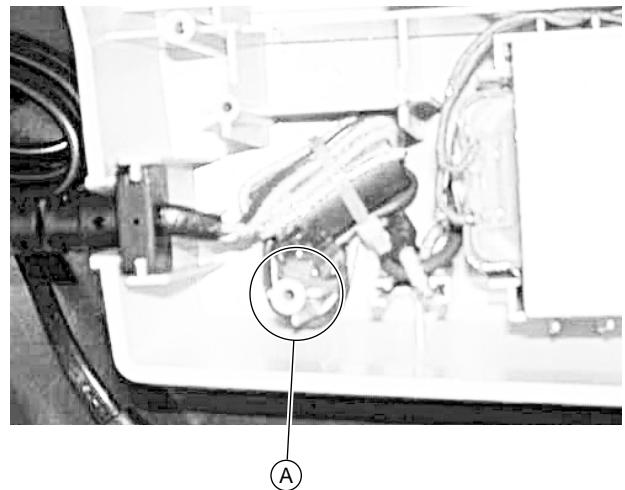
Wind the AC cord around the ferrite core so that the size is as shown in the figure below.

Wind every AC cord three times around the ferrite core.

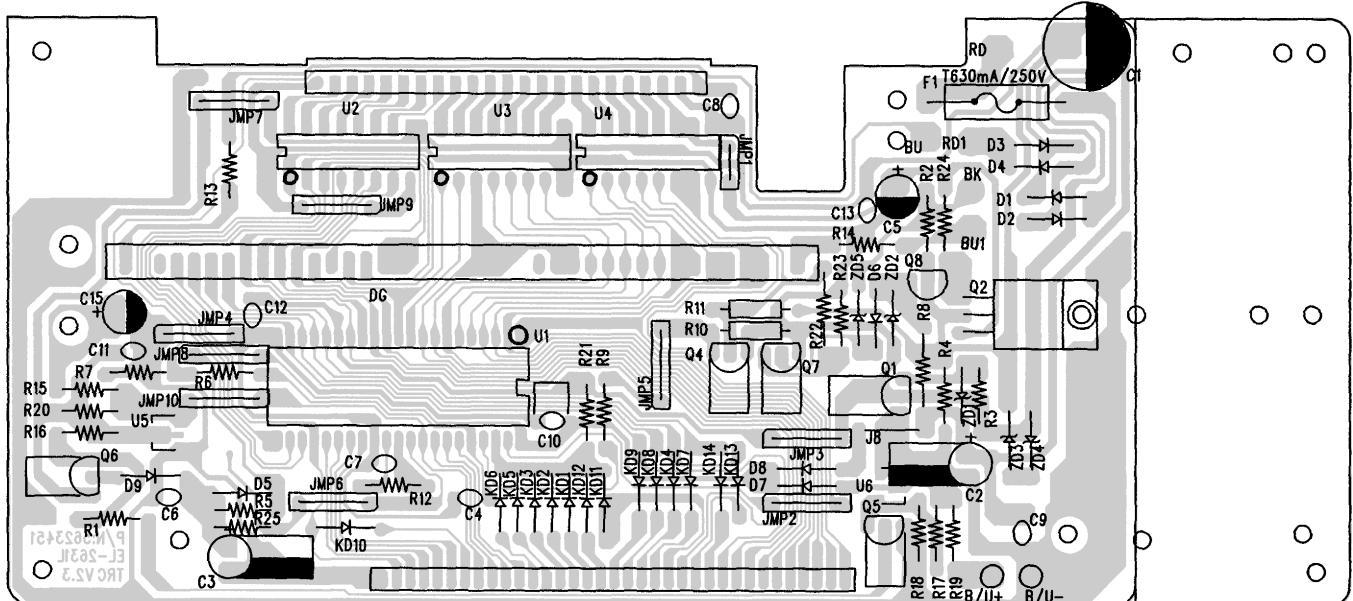


(3)-2. FIX THE FERRITE CORE TO THE CABINET

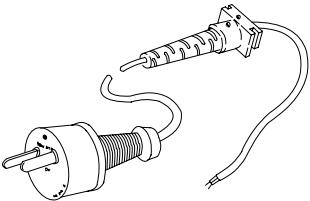
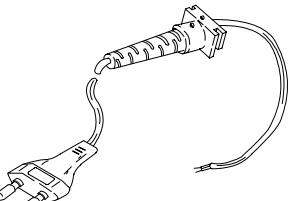
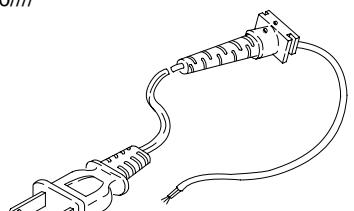
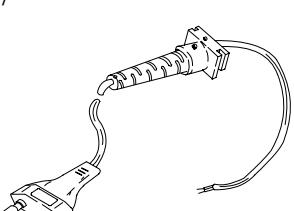
Fix the ferrite core to the root of boss A by hot melt as shown in the figure below.



6. PARTS LAYOUT



7. PLUG SHAPE

0GS5420170///	1  (ABC)	0GS5420160///	2  (TRC)
0GS5420150///	3  (Y1C)	0GS5420450///	4  (ACO)

8. PACKING FORM

Model	Form	SPEC	Country
EL-2631L	Gift box	ABC	SCA
		TRC	Agent
		ACO	SEEG
EL-2615P	Gift box	Y1C	SECL

9. CIRCUIT DIAGRAM

13-MT-89G

13-MT-89G CIRCUIT DIAGRAM

This diagram illustrates the internal circuitry of the 13-MT-89G electronic calculator. It features a central microcontroller, the **TC83220-0406**, which is connected to a variety of components including switches, resistors, capacitors, and diodes.

Key Components:

- Microcontroller:** TC83220-0406, connected to pins 1 through 32.
- Switches:** SW1 through SW5, used for function selection and memory operations.
- Power Supply:** A complex network of resistors (e.g., R1-R14, R20, R21, R22, R23, R24, R25, R26, R27, R28, R29, R30, R31, R32, R33, R34, R35, R36, R37, R38, R39, R40) and capacitors (e.g., C1-C11, C12, C13, C14, C15, C16, C17, C18, C19, C20, C21, C22, C23, C24, C25, C26, C27, C28, C29, C30, C31, C32, C33, C34, C35, C36, C37, C38, C39, C40) for voltage regulation and filtering.
- Diodes:** ZD1-ZD4, D1-D4, and IN4148, used for protection and signal processing.
- Resistors:** Various resistors (e.g., R1-R40) are used throughout the circuit for biasing and current limiting.
- Capacitors:** Various capacitors (e.g., C1-C40) are used for coupling, bypassing, and filtering.
- Inductors:** Inductors are represented by three vertical bars in the dashed boxes labeled F1, F2, F3, and F4.

The diagram also includes several sub-circuits and connectors:

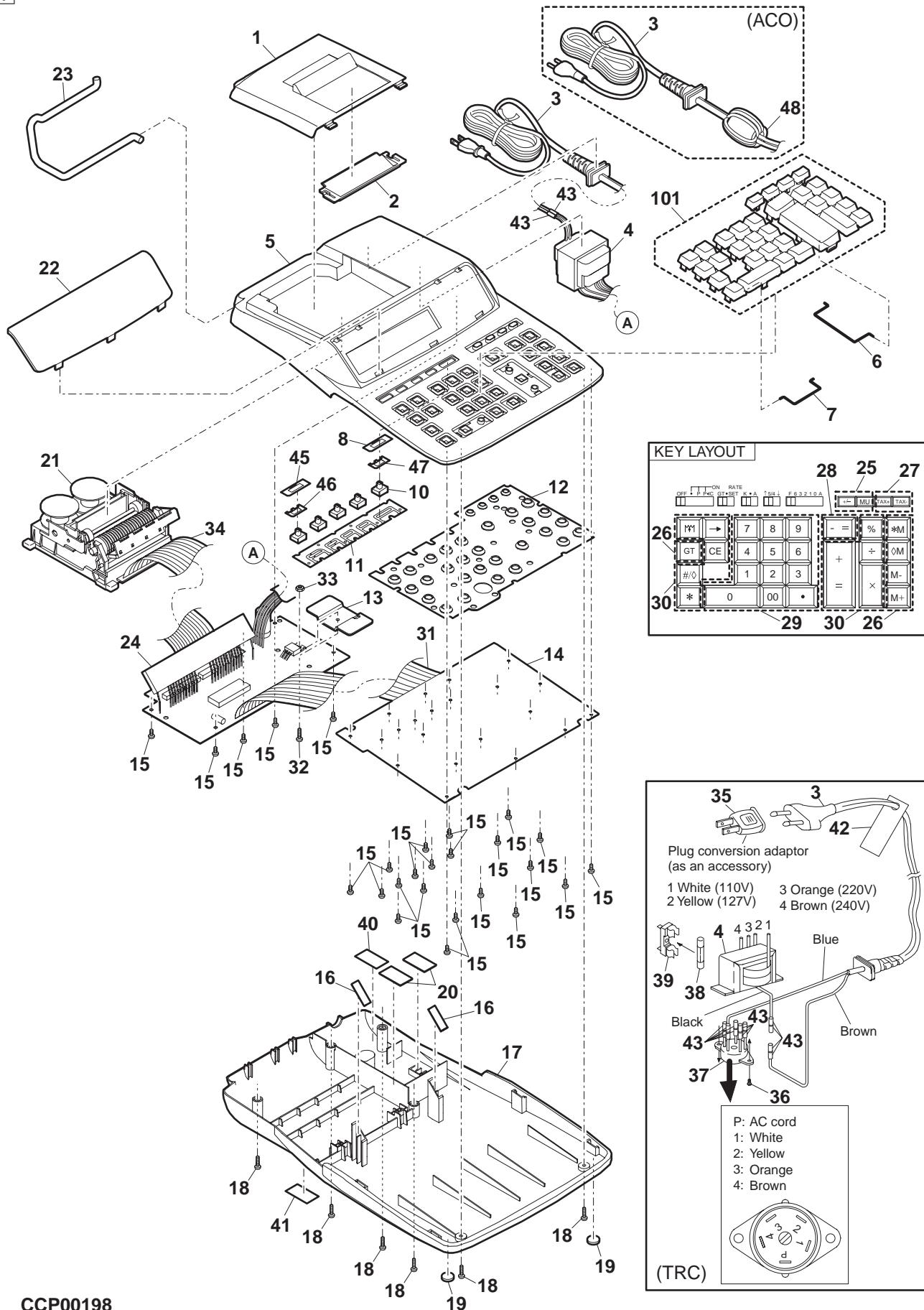
- Sub-circuits:** HKP-95149A, HKP-95150A, HKP-95148A, and HKP-95133A.
- Connectors:** RO5, RO6, RO7, RO8, RO9, RO10, RO11, RO12, RO13, RO14, RO15, RO16, RO17, RO18, RO19, RO20, RO21, RO22, RO23, RO24, RO25, RO26, RO27, RO28, RO29, RO30, RO31, RO32, RO33, RO34, RO35, RO36, RO37, RO38, RO39, RO40.

PAS12 PRINTER HEAD HIGH SPEED WITH EURO MARK

PA512 **PRINTER HEAD** **HIGH SPEED WITH EURO MARK**

■ PARTS GUIDE

1 Exteriors



CCP00198

1 Exteriors

2 Packing material & Accessories

NO.	PARTS CODE	PRICE RANK	NEW MARK	PART RANK	DESCRIPTION	
1	0 G S 9 2 0 1 0 2 0 / / / /	AD	N	D	Manual(E/F/S)	[EL-2631L:ABC,TRC]
	0 G S 9 2 0 1 7 4 0 / / / /	AK	N	D	Manual(E/F/S/I/S/SW/P/FI)	[EL-2631L:ACO]
	0 G S 9 2 0 1 7 5 0 / / / /	AK	N	D	Manual(E/F/S)	[EL-2615P]
2	0 G S 9 1 8 2 7 6 0 / / / /	AB		D	Ink ribbon caution card	
3	0 G S 9 3 0 0 9 2 0 / / / /	AP	N	D	Gift box	[EL-2631L:ABC,TRC]
	0 G S 9 3 0 1 9 8 0 / / / /	AP	N	D	Gift box	[EL-2631L:ACO]
	0 G S 9 3 0 1 9 9 0 / / / /	AP	N	D	Gift box	[EL-2615P]
4	0 G S 9 4 2 8 5 6 0 / / / /	AL	N	D	Pulp mold(L)	
5	0 G S 9 4 2 8 5 5 0 / / / /	AL	N	D	Pulp mold(R)	
6	0 G S 9 4 1 3 6 3 0 / / / /	AD		D	P.E.bag	[for UNIT]
7	0 G S 9 4 1 1 8 0 1 / / / /	AC		D	P.E.bag	[for AC CORD]

3 PWB unit

SHARP

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Quality & Reliability Control Center**

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